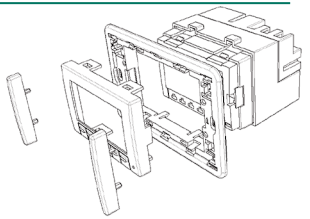
GIACOMINI
WATER E-MOTION

INSTRUCTION
FLUSH MOUNTING WEEKLY PROGRAMMABLE THERMOSTAT
K490IY001

INDEX

PACKAGE CONTENTS

- 1 removable programmable thermostat
- 1 bottom
- 3 frames
- 3 coloured covers
- 3 special covers for Bticino Axolute and Ave Sistema 44
- 3 pairs of adaptors
- 1 special pair of adaptors for Bticino Matix
- 2 screws
- 1 user manual

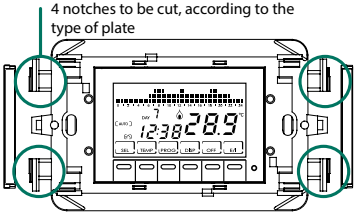


1 INSTALLATION

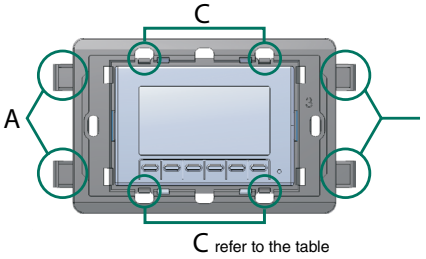
The K490IY001 programmable thermostat shall be installed in a 3-module recess box, in a central area of the flat, 1.5 m above the ground, if possible. Depending on the desired plates, the necessary components (included in the package) shall be used in accordance with the table below.

COMPATIBLE PLATES	STANDARD COVER*	STANDARD FRAME	SIDE ADAPTORS*	NOTCHES TO BE REMOVED
Bticino Living International e Transizione Piana	B	1	NO	NO
Bticino Living Light Air	B	3	NO	YES position "A+C"
Bticino Light, Light tech	B	1	NO	NO
Bticino Axolute	A	1	NO	NO
Bticino Matix	B	2	YES (dedicated)	YES position "A"
Vimar Idea e Rondò	B	2	YES	YES position "B"
Vimar Plana e Eikon	B	1	NO	NO
Vimar Eikon Evo	A	3	NO	YES position "A"
Vimar Arké	A	3	NO	NO
Gewiss Chorus One, Lux, Art	B	2	NO	YES position "A"
Ave sistema 45: Zama, Banquise, Yes, Ral	B	2	YES	NO
Ave sistema 44: Zama, Personal, Tecnopolimero	A	1	NO	NO
Legrand Cross, Vela quadra, Vela tonda	B	2	NO	YES position"A"

N.B. Available colours: white, silver and black (cover "B"); white, silver and black (cover "A")



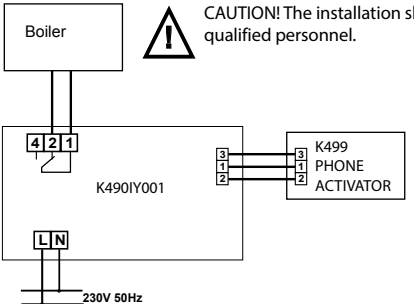
STANDARD SIDE ADAPTORS



CARRY OUT THE OPERATIONS BELOW:

- → remove, if required, the notches (according to the type of plate)
- → fit, if required, the side adaptors into position
- → secure the bottom to the proper frame
- → connect, with the bottom, the two boiler connecting wires and the three wires (if any) connecting with the K499Y001 (refer to "Electric connections", page 4)
- → connect the power supply to L-N
- → screw the frame down to the box by means of the available screws
- → fit the cover onto the programmable thermostat body
- → fit the plate into position
- → insert the programmable thermostat and verify that it can be put in and removed easily, by simultaneously pressing the two cover sides.

2 ELECTRIC CONNECTIONS



N.B. When the K490IY001 is switched off, the boiler contact will remain in the same position.

3 BUFFER BATTERY FUNCTION

The internal battery of the K490IY001 has the sole purpose of enabling the programmable thermostat to switch off the system and remain in the mode of "low consumption" during the absence of mains voltage. In this situation, the display will show the message: "Blackout".

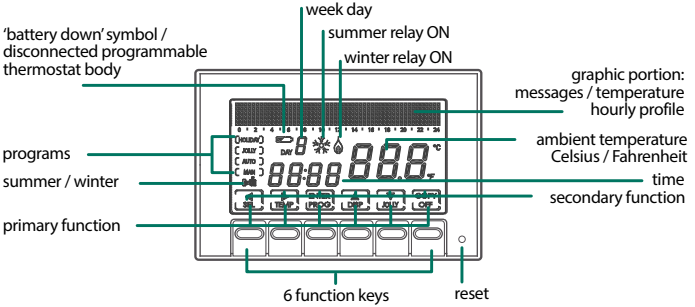
If the battery symbol began to flash on the display, verify that the safety tab is fully extended.
If so, it means that the backup battery: contact your nearest Service Centre Giacomini.

N.B. even if the battery is low, the thermostat will still work normally, but will not be assured shutdown of the plant and the storage of the date / time during the blackout.

4 A QUICK GUIDE TO PROGRAMMING

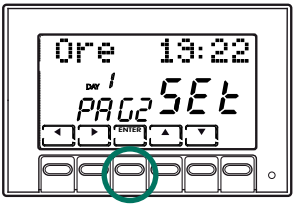
DESCRIPTION OF THE BUTTONS

The programmable thermostat features six buttons, the functions of which change depending on the situations and are described by the symbols shown on the displays next to the buttons themselves.



N.B. Pressing a button for the first time will have no effect – it will only turn the display light on, to allow you to better view the display.

TIME AND DATE SETTINGS



After powering on, briefly press the PROG button: the "Setup" message will display. Now, press ▶, to go to the "Hours" page; use the ▲ and ▼ buttons to set the time (hours), then press ▶ to set the "Minutes".

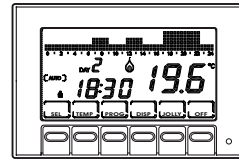
Press ▶ again to select the Year, Month and Day in turn.
By pressing ▶ again, you can decide on whether the automatic solar/summer time change should be disabled (this function will be active at first, yet you can deactivate it by selecting "NO " by means of the ▲ and ▼ buttons).
You can always go back to the previous page by pressing ◀.
Press **ENTER** to exit the Setup menu.

OPERATION PROGRAMS

The K490IY001 programmable thermostat provides for different operating modes (i.e. programs):

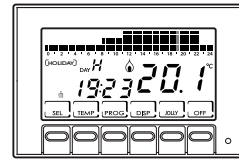
- "AUTO" WEEKLY PROGRAM:

One of the four programmable temperatures can be associated to each half an hour's time period, for each day of the week. This program will be displayed when the programmable thermostat is switched on and, as a rule, is the one most commonly used.



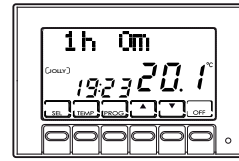
- "HOLIDAY" DAILY PROGRAM:

You can select, just like with the "AUTO" program, one of the four programmable temperatures associated to each half an hour's time period, yet this sequence will be repeated the same every day.



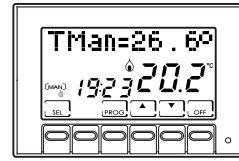
- "JOLLY" TEMPORARY PROGRAM:

You may choose to keep a given temperature over a certain number of hours; then, the previously active program will be resumed.



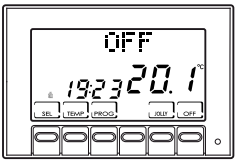
- "MAN" MANUAL PROGRAM:

The programmable thermostat will be set to a fixed temperature (to be specified each time) over an unlimited time, until another program is selected.



- SYSTEM OFF OR SET TO THE ANTI-FREEZE PROGRAM ("OFF/ANTI-FREEZE"):

The system will remain OFF or, as an alternative, will keep a very low temperature (2°C to 7°C), to prevent the fluid from freezing in the heating system.



POSSIBLE TEMPERATURE SETTINGS

The AUTO and HOLIDAY programs allow you to set four different temperatures and, also, select one of them for every half an hour's time period during the day. Three of these temperatures (T1, T2 and T3) may range from 2°C to 40°C, whereas the fourth (T) anti-freeze temperature (TA) may range between 2°C and 7°C or may be set to "OFF" (i.e. the system will be disconnected).
The MANUAL program features a specific temperature of its own (TMan), and so does the JOLLY program (Tj): both of these temperatures will be set in their respective screenshots and may range between 2°C and 40°C.
The ANTI-FREEZE /OFF program will instead follow the TA temperature (which may range between 2°C and 7°C); as an alternative, it may be set to "OFF", which will cause the system to be fully switched off.

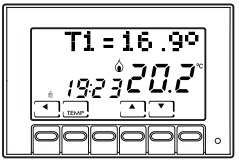
SETTING THE OPERATION PROGRAMS

→ SELECTING A PROGRAM

By pressing the **SEL** button, the various operating programs will be selected in a cyclic sequence: AUTO > MAN > OFF > HOLIDAY > AUTO.
NOTE. The JOLLY temporary program is not included in the program sequence: it can be selected directly by means of the JOLLY button.

→ SETTING THE TEMPERATURES

Press, with the AUTO, HOLIDAY and OFF programs, the **TEMP** button to change the values for the four programmable temperatures. By pressing the **TEMP** button several times, the T1, T2, T3 and Ta values will display in a sequence: go to the T you wish to modify, then use the ▲ and ▼ arrows to increase or decrease the temperature by one tenth degree at a time. You can go back to the initial state by means of the ◀ arrow. Please be reminded that T1 will always be less than or equal to T2, whereas T2 will always be less than or equal to T3.



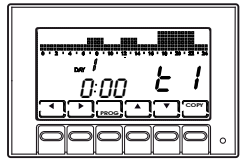
With the JOLLY program, the TEMP button will alternate the display of the set temperature (Tj) with the hours left to the end of the program: both of these values can be changed by means of the ▲ and ▼ buttons.
With the MAN program, you can change the fixed temperature (Tman) by means of the ▲ and ▼ buttons.

→ CHANGING THE CURRENT DATE AND TIME

Briefly press the **PROG** button to enter the "Setup" menu, which will allow you to change the time, date, winter/summer operation and the automatic summer time function.

→ CUSTOMIZING THE "AUTO" WEEKLY PROGRAMMING AND THE "HOLIDAY" DAILY PROGRAMMING

Keep the PROG button depressed until the "Config" message is displayed. This menu allows you to program the weekly profile (AUTO program) and daily profile (HOLIDAY program) and, also, set the advanced functions (refer to the next sections for a description of these functions).



NOTE: If the "Setup" message is displayed instead of "Config", the button has been pressed too briefly: you shall press **ENTER** to go back to the normal operating state and, then, try again

When you enter the "Config" menu, a page will be displayed, which will allow you to select the desired temperature (T1/T2/T3/Ta) for each half an hour's time period of the specified day (i.e. 1 to 7, indicating the week days from Monday till Sunday).

N.B. The T1/T2/T3/Ta temperatures will be shown in the right portion of the display together with the symbols t1 - t2 - t3 - tA

The ▶ and ◀ buttons allow you to move, by half an hour's time fractions, either to the right or to the left.
The ▲ and ▼ buttons allow you to move from a programmed temperature to another temperature.

By pressing **PROG** briefly, you will move to the following day (DAY 1 > 2 > 3 > 4 > 5 > 6 > 7> H).
Press the **COPY** button to copy the temperature profile of the current day to the following day.

After H (HOLIDAY daily program profile), you will go to the 'Correct' parameter page.

By pressing **PROG** longer or pressing ◀ at the beginning of day 1, you will go immediately to the 'Correct' page.
From the 'Correct' page on, pressing **ENTER** will exit the "Config" menu.

→ SETTING THE "JOLLY" PROGRAM

By pressing the **JOLLY** button with all programs (except for MAN), the temporary program will be selected: this program allows you to define the desired temperature and the time duration (hours) of the same (up to 240 hours, i.e. 10 days max.). For instance, you may find it useful to keep a lower temperature during the weekend, when you are away.
After you have entered this program, you can change the time period (which has initially been set to one hour) and increase the number of hours by means of the ▲, button (or decrease them by means of the ▼ button).
By pressing **TEMP** you can display and change temperature Tj, by means of the ▲ and ▼ buttons.
By pressing **TEMP** again, the JOLLY program time period will be displayed again.
When this time period expires, you will go back to the start program.

→ SETTING THE "OFF/ANTI-FREEZE" PROGRAM

By pressing the **OFF**, button with any operating program, the programmable thermostat will go to the 'OFF/Anti-freeze' state.
The anti-freeze temperature (Ta) can be programmed by means of the **TEMP**, button, from an OFF value (i.e. the boiler will always be OFF) to a range of 2.0°C to 7.0°C (to an accuracy level of one tenth degree), by means of the ▲ and ▼.
You can go back to the OFF state by means of the ◀ arrow.
By pressing the OFF button again, you will go back to the previous operating state.

→ ALTERNATIVE DISPLAYING

With the AUTO and HOLIDAY programs, you can display other information instead of the temperature profiles, by pressing the **DISP** button several times.
When pressing the button for the first time, the temperature programmed for the current half an hour's time period will display; when pressing the button for the second time, the "enlarged" temperature profile (i.e. from one hour until three hours past the current half an hour's time period) will display; when pressing the button for the third time, the date will display. Finally, when the button is pressed for the fourth time, you will go back to the initial temperature profile.

5 FUNCTION DETAILS

AVAILABLE PROGRAMS

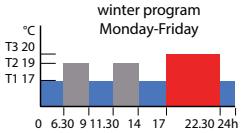
The K490IY001 features different operating modes (i.e. programs):

- "AUTO" weekly program
- "HOLIDAY" daily program
- "JOLLY" temporary program
- "MAN " manual program
- System OFF or set to the anti-freeze program ("OFF")

→ "AUTO" WEEKLY PROGRAM

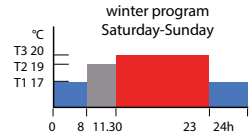
With the AUTO operating mode, you can use four temperature levels (Ta, T1, T2 and T3), according to a programming schedule based on 30-minute steps, on a 24-hour basis, seven days a week. Days are numbered 1 to 7 and correspond to the seven week days (starting from Monday).
In order to make the programming easier, you can set the first day and copy it to the following days. The default setting for days 1-5 (i.e. Monday through Friday) is as follows:

00:00 – 06:30 T1
06:30 – 09:00 T2
09:00 – 11:30 T1
11:30 – 14:00 T2
14:00 – 17:00 T1
17:00 – 22:30 T3
22:30 – 24:00 T1



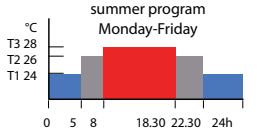
Conversely, the default setting for days 6 and 7 (i.e. Saturday and Sunday) is as follows:

00:00 – 08:00 T1
08:00 – 11:30 T2
11:30 – 23:00 T3



23:00 – 24:00 T1

The values for the four temperatures can be programmed by means of the TEMP function. The temperature profile (hourly variation) can be programmed by means of the PROG function

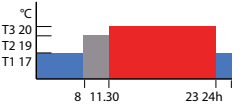


In case of summer operation (i.e. conditioning), the default program will be the one shown in the figure

→ "HOLIDAY" DAILY PROGRAM

With the HOLIDAY operating mode, you can use the four temperature levels according to a programming schedule based on 30-minute steps, on a 24-hour basis. Therefore, you will achieve a daily programming (regardless of the week days). The default temperature profile will be as follows:

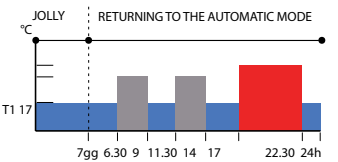
00:00 – 08:00 T1
08:00 – 11:30 T2
11:30 – 23:00 T3
23:00 – 24:00 T1



The temperature values can be programmed by means of the TEMP function.
The temperature profile (hourly variation) can be programmed by means of the PROG function.

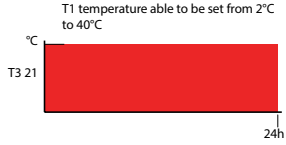
→ JOLLY

The JOLLY mode allows you to set a programmable temperature (Tj) over a programmable number of hours (1 to 240). It can be used when you wish to introduce a temporary programming change without modifying the programming parameters, e.g. to keep a high temperature over a longer time in the evening (when you host friends at home) or keep a lower temperature during a weekend when you are away from home. If you have entered the JOLLY mode by using the dedicated function button, you will (upon the expiry) go back automatically to the current programming.



→ MANUAL

The MAN mode allows you to manually set a fixed temperature (Tman), ranging between +2.0°C and +40.0°C, with no expiry and without changing the weekly or daily programming.
It can be used, for instance, to keep a different temperature from the daily programming ones when nobody is at home, or to remotely switch the system on and cause the latter to reach a steady temperature.



→ OFF

The OFF mode shall be used when you wish to turn the system off.
This mode makes use of the TA (anti-freeze) temperature as a reference, in order to guarantee the system protection at low temperatures.
The TA temperature is usually set to +5°C, yet it can be set to OFF, thus causing the boiler to be fully switched off. The weekly or daily programming will not change.

POSSIBLE TEMPERATURE SETTINGS

The system provides for four different temperature levels: three levels for normal operation, and one level ("anti-freeze") to be used when you wish to keep the boiler OFF, yet without taking the risk of system fluid freezing.
The programming for the three temperatures ('T') will be subjected to their mutual values, i.e. T1 cannot exceed T2, T2 cannot exceed T3 or be less than T1, and T3 cannot be less than T2.
Therefore, greatest care shall be taken when programming (by making use of the **TEMP** button).

T1 will range between +2.0 and +T2 degrees, with variations every one tenth degree [default value: 17.0]
T2 will range between +T1 and +T3 degrees, with variations every one tenth degree [default value: 19.0]
T3 will range between +T2 and +40.0 degrees, with variations every one tenth degree [default value: 20.0]
TA ("anti-freeze") will range between +2.0 and +7.0 degrees, with variations every one tenth degree, or it can be OFF, i.e. the boiler will always remain OFF [default value: 5.0].

ADVANCED FUNCTIONS AND BUTTONS

■ USING THE **SEL** BUTTON

The **SEL** button allows you to select the programmable thermostat operating mode, according to the programs below:

→ HOLIDAY
→ AUTO
→ MANUAL
→ OFF

To change the chosen program, you shall press the **SEL** button in a cyclic sequence. The first three states will be indicated by a small writing on the left of the display, whereas the OFF state will be shown in the graphic area at the top.

■ USING THE **TEMP** BUTTON

→ AUTO, HOLIDAY and OFF modes:

By pressing the **TEMP** button, you will access the programming for the four temperatures that can be used with the above-mentioned states.

The ▲ and ▼ arrows allow you to change the temperatures, subject to the constraint that T1 cannot exceed T2, T2 cannot be less than T1 and higher than T3, and T3 cannot be less than T2.

The **TEMP** button allows you to go to the next temperature (cyclic sequence) T1>T2>T3>Ta>T1. By pressing the ◀ arrow, you will go back to the start window.

→ JOLLY mode

By pressing the **TEMP** button, you will alternately shift from programming the Tj temperature to the one for the Jolly time period (i.e. 0 to 240 hours, equal to 10 days).

The ▲ and ▼ buttons allow you to modify Tj (between +2°C and +40°C) as well as the time (1 hour's steps).

■ USING THE **PROG** BUTTON

→ **PROG** (press briefly) > SET UP

→ Winter/PAG 1/Set
By pressing ▲ or ▼ you will shift from Winter to Summer, and vice versa.
By pressing ▶ the page will change; by pressing **ENTER** you will exit the **PROG**.

→ Hours HH (blinking): MM /PAG2/Set
By pressing ▲ you will cyclically increase the hours, by pressing ▼ you will cyclically decrease the hours.
By pressing ▶ the page will change; by pressing **ENTER** you will exit the **PROG**.

→ Min. HH:MM (blinking) /PAG 3/Set
By pressing ▲ you will cyclically increase the minutes; by pressing ▼ you will cyclically decrease the minutes.
By pressing ▶ the page will change; by pressing **ENTER** , you will exit the **PROG**.

→ Year: YYYY /PAG 4/Set
By pressing ▲ you will increase the years; by pressing ▼ you will decrease the years.
By pressing ▶ the page will change; by pressing **ENTER** you will exit the **PROG**.

→ Month: MM /PAG 5/Set
By pressing ▲ you will cyclically increase the months; by pressing ▼ you will cyclically decrease the months.
By pressing ▶ the page will change; by pressing **ENTER** you will exit the **PROG**.

→ Day: DD /PAG 6/Set
By pressing ▲ you will cyclically increase the days; by pressing ▼ you will cyclically decrease the days.
By pressing ▶ sthe page will change; by pressing **ENTER** you will exit the **PROG**.
NOTE. When the date has been set, the programmable thermostat will automatically determine the week day.

→ Sum Time YES /PAG 7/Set
This will select the summer time automatically (applicable to European countries and some more countries). This setting allows you to have the time updated automatically when the winter/summer time changes (i.e. in March and October). By pressing ▲ or ▼ you will change from YES to NO. By pressing ▶ you will go back to page 1 (Winter/Summer); by pressing **ENTER** , you will exit the **PROG**.

→ **PROG** (press longer) -> CONFIG.

The day 1 display will be shown, with the temperature chart every half an hour, the half an hour indication and the associated temperature (t1 - t2 - t3).- tA
Day 1 will correspond to Monday, and so on. Day 'H' will be a Holiday, which will not change during the week.
By pressing ▶ you will move forward by half an hour.
By pressing ▲ or ▼ you will move up or down from tA to t1 to t2 to t3.
By pressing **PROG** briefly, the day will change (1, 2, 3, 4, 5, 6, 7, H).
After 'H', you will go to page 2 (Correct).
By pressing **PROG** (longer), you will immediately go to page 2.
By pressing **COPY** you can copy the temperature profile for the current day to the following day.
By pressing **ENTER** from page 2 on, you will exit the programming.
By pressing ◀ you will go back to the preceding half an hour (even of the previous day).
By pressing ◀ at the beginning of day 1, you will immediately go to page 2.

→ Correct/PAG 2/XX.X°
It allows you to modify the measured temperature which might, due to the unit having been fitted to a wall recess and at an inappropriate height, not show the real perceived temperature.
It is recommended that the unit should be calibrated by comparison with a thermometer placed at the desired zone/height.
By pressing ▲ and ▼ you will change the value on the temperature display.
By pressing ▶ $$, you will go to page 3; by pressing **ENTER** you will exit.

→ Celsius/PAG 3/XX.X°
It allows you to select the temperature displaying scale, by choosing from between Celsius degrees and Fahrenheit degrees.

By pressing ▲ or ▼ you will change from Celsius to Fahrenheit.
By pressing ▶ you will go to page 4; by pressing **ENTER** you will exit.

→ Light OFF-ON Xs/PAG 4/con
It allows you to adjust the display back-lighting (blue light). You can choose not to have the display back-lighting (OFF) or have it over a programmable time (1 to 9 seconds) or have it all the time (ON).
When the back-lighting has been set to "always ON" or "always OFF", you can activate the various functions by simply pressing the buttons once.
By pressing ▲ or ▼ you will change from OFF to ON and, also, you can select the time period (1 to 9 seconds, always ON). By pressing ▶ you will go to page 5; by pressing **ENTER** you will exit.

→ Light Bright X/PAG 5/con
It allows you to modify the display brightness (according to 9 levels).
By pressing ▲ or ▼ you will change the brightness level (1-9).
By pressing ▶ you will go to page 6; by pressing **ENTER**, you will exit
Please note that the more intense the display brightness, the greater the current consumption will be (and, therefore, the less the battery life).

→ Italian/PAG 6/con
It allows you to change the language used for programming.
By pressing ▲ or ▼ you will cyclically change from one language to another one. By pressing ▶ you will go to page 8; by pressing **ENTER**, you will exit.

→ Lock? NO (YES)/PAG 8/con
It allows you to lock the keypad, by means of an alphanumeric 4-digit code.
It will work only once; after that, it shall be enabled again
By pressing ▲ or ▼ you will change from NO to YES; then, by pressing **ENTER** the password will be required, which shall be entered by means of the ▲ or ▼, arrow, by selecting the digits by pressing ▶ and ◀
Pressing ENTER will store the password into the memory and you will go back to the normal operation display, where only the **ENTER f**unction button will be available. By pressing this button you will be asked to enter the password, by means of the ▲ and ▼, arrows and by pressing **ENTER** after that. The display will go back to the normal programming, thus allowing all functions to be performed.
By pressing ▶ you will go to page 9; by pressing **ENTER** you will exit.

→ Reset? NO (YES)/PAG 9/con
By pressing ▲ or ▼you will change from NO to YES. By pressing **ENTER,** while "YES" is being displayed, all parameters (except for the date and the time) will be reset to the factory default values.
By pressing ▶ you will go to page A; by pressing **ENTER** you will exit.

→ K490IY001 vX.Y/--/con
It allows you to display the K490IY001 programmable thermostat software release.
By pressing **ENTER**, you will exit and go back to the normal operation page.
By pressing ▶ you will go back to the hourly profile programming (page 1).

■ USING THE **DISP** BUTTON

The **DISP** button allows you to display (only in the AUTO and HOLIDAY states) some windows showing miscellaneous information, which will depend also on the operating state.

Below are the windows that can be displayed:
→ Day profile / hour:minute / Tamb
→ Current temperature set (e.g. T3=20.0°) / hour:minute /Tamb
→ 4-hour profile (-1+3) / hour:minute / Tamb
→ DD/MM/YYYY / hour:minute /Tamb

■ USING THE **JOLLY** BUTTON

The **JOLLY** button allows you to replace the normal operation with the temperature forcing to a fixed value over a preset time interval. The displayed window is shown below:

→ JOLLY state time period (HH h MM m) / hour:minute / Tamb
You can change the JOLLY state time period (by 1-hour steps) by means of the ▲ and ▼ arrows. The Jolly temperature can be set by pressing the **TEMP**,button, which will display a window similar to the one below:

→ Tj=xx.x° / hour:minute / Tamb
This window will be shown on the display until you press the **TEMP** button again: in this case, you will go back to the previous display indicating the state time period.
To exit the JOLLY state before the latter expires, you can set the number of hours back to zero by means of the ▼ arrow and wait one minute, to go back automatically

to the original state, or you may change, by means of the **SEL** button, to the desired operating state, according to the AUTO / MAN / HOLIDAY / OFF cycle.

- USING THE **OFF** BUTTON

The **OFF** button allows you to set, in any operating state, the system to the switch-off state. The window below will be displayed:

→ OFF / hour:minute / Tamb

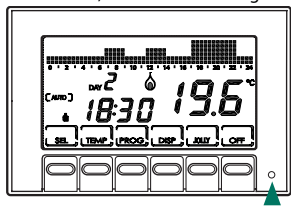
The anti-freeze temperature (Ta) can be programmed by means of the TEMP button, from the OFF value (i.e. the boiler will always be OFF) to a range of 2,0°C to 7,0°C (to an accuracy level of one tenth degree), by means of the ▲ and ▼. The window below will be displayed:

→ Ta=x.x° / ora:min / Tamb

By keeping the arrow depressed a long time, the value will quickly and automatically increase or decrease. Press the ◀ arrow to go back to the OFF window.
By pressing the **OFF** button again, you will go back to the previous operating state.

RESET

Due to unpredictable and unusual events, the unit might need re-starting (e.g. in case of a block following heavy electromagnetic disturbance). In such a case, instead of removing the batteries and waiting for the programmable thermostat to be switched off in a "natural" manner, you can act more quickly by pressing the small round button (RE-START) found inside the unit (at the lower right-hand edge) by using a clip or a pin. The unit will be started again and the CH141 message will be displayed a few seconds; then, the unit will reach the AUTO state.



All of the previous configuration will be kept, ue to its having been stored by the programmable thermostat.
The date and clock will as a rule not be modified.
If, on the contrary, you wish to restore the factory programming, the system can be reset by means of the special RESET command, available in PROG /CON FIG, from which you will exit to the AUTO state. In this case, all of the user's settings and customization will be lost and will be replaced with the factory ones, except for the date and time.

6 REMOTE PROGRAMMING BY MEANS OF K499Y001

The K490IY001 unit can be conveniently supplied with the K499Y001 phone activator (to be purchased separately), connected with a GSM mobile telephone network.

Using the K499Y001 phone activator will allow you to:

- check the temperature in the home;
- program the temperature in the home;
- receive notifications of the state changes affecting the two alarm contacts (e.g. a boiler alarm, a burglar alarm, a low temperature alarm indicating some boiler malfunction, a sewage tank overflow alarm, and so on);
- turn on/off an external load operating at 230 VAC / 500 W (e.g. the irrigation system) by means of an internal relay;
- notify the lack of 230 V power supply (if a connection with an external optional battery is available).

This appendix deals with the ambient temperature control in connection with the K490IY001 programmable thermostat. As regards the alarm management and the unit installation, reference should be made to the K499Y001 device manual.

The K499Y001 activator connected with the K490IY001 unit allows a remote user to send a SMS enabling the same to be informed about the current system state or command the state to be reached.

The “Remote Command Received” message will appear several times on the K490IY001 display during the entire remote control management.

SMS COMMANDS

Below are the SMS messages that can be used to control the K490IY001 unit:

- **#STATUS** this allows you to be informed about the state of the K490IY001 unit, of the alarms and the relay

When this message is sent, the K499Y001 will reply, in less than one minute, by sending two state SMS's including the data below (the example refers to the real operation in the AUTO mode):

→ MESSAGE 1

TAMB=22.9	current ambient temperature reading
T1=17.0	temperature set T1
T2=19.0	temperature set T2
T3=23.0	temperature set T3
TOFF=5.0	temperature set T (Anti-freeze)
TMAN=16.5	temperature set T (Manual)
TJOL=19.0	temperature set T (Jolly)
HJOL=1	Jolly program duration hours
DJOL=0	Jolly program duration days
PROGRAM=AUTO	program set on the K490IY001 unit
REMOTE= ---	remotely set program (--- : none)
PLANT=OFF	programmable thermostat relay state
BATT=HI	K490IY001 battery state

→ MESSAGE 2

INPUT1=OFF	alarm 1 state
INPUT2=OFF	alarm 2 state
OUTPUT=OFF	K499Y001 relay state

This will be the standard replay to every single message sent.

Below are only the rows differing from the message shown above:

- **#FROST** this will set the anti-freeze program, i.e. it will set the system to OFF. The reply message will read as follows:

  PROGRAM=OFF
  REMOTE=OFF

The K490IY001 display will blink to OFF (the OFF message will light up steady if the SEL setting has been made).

- **#RESUME** this command will be used to go back from the state sent by means of the remote control to the state set on the K490IY001 unit.

The reply message will read as follows:

```
PROGRAM=AUTO
REMOTE= ---
```

The K490IY001 display will go back to the AUTO state.

- **#MAN** this command will be used to set the MANUAL state with the TMan set on the K490IY001 unit (available in the state message)

The reply message will read as follows:

```
PROGRAM=MANUAL
REMOTE=MANUAL
```

The K490IY001 display will read the MAN state (it will blink, to indicate the remote setting) as well as TMan=16.5.

- **#ECONOMY** this command will be used to set the MANUAL state with TMan equal to T1 (available in the state message)

The reply message will read as follows:

```
PROGRAM=MANUAL
REMOTE=ECONOMY
```

The K490IY001 display will read the MAN state (it will blink, to indicate the remote setting) as well as TM an=17.0, coinciding with T1.

- **#COMFORT** this command will be used to set the MANUAL state with TMan equal to T3 (available in the state message).

The reply message will read as follows:

```
PROGRAM=MANUAL
REMOTE=COMFORT
```

The K490IY001 display will read the MAN state (it will blink, to indicate the remote setting) as well as TM an=20.0, coinciding with T3.

- **#AUTO** this command will be used to set the AUTO state (weekly programming).

The reply message will read as follows:

```
PROGRAM=AUTO
REMOTE=AUTO
```

The K490IY001 display will read the AUTO state (it will blink, to indicate the remote setting).

- **#HOL** chis command will be used to set the HOLIDAY state (daily programming)

The reply message will read as follows:
```
PROGRAM=HOLIDAY
REMOTE=HOLIDAY
```
The K490IY001 display will read the HOLIDAY state (it will blink, to indicate the remote setting).

- **#JOL** this command will be used to set the Jolly state

The reply message will read as follows:
```
PROGRAM=HOLIDAY
REMOTE=HOLIDAY
```
The K490IY001 display will read the Jolly state (it will blink, to indicate the remote setting).

- **#T1=**value

It will set the temperature value for T1
The value will be written in the DU.d format, i.e. TensUnits.decimal (e.g. **#T1=19.2**)
The Tens may be left out (e.g. 9.0). The reply message will show the new value for T1.

- **#T2=**value

It will set the temperature value for T2
The value will be written in the DU.d format, i.e. TensUnits.decimal (e.g. **#T2=20.4**)
The Tens may be left out (e.g. 9.0). The reply message will show the new value for T2.

- **#T3=**value

It will set the temperature value for T3
The value will be written in the DU.d format, i.e. TensUnits.decimal (e.g. **#T3=24.3**)
The Tens may be left out (e.g. 9.0). The reply message will show the new value for T3.

- **#TMAN=**value

It will set the temperature value for the MANUAL program
The value will be written in the DU.d format, i.e. TensUnits.decimal (e.g. **#TMAN=22.0**).
The Tens may be left out (e.g. 9.0). The reply message will show the new value for TMAN.

- **#TJOL=**value

It will set the temperature value for the JOLLY program
The value will be written in the DU.d format, i.e. TensUnits.decimal (e.g. **#TJOL=24.0**)
The Tens may be left out (e.g. 9.0). The reply message will show the new value for TJOL.

- **#HJOL=**value

It will set the hour value for the JOLLY program
The value will be written in the DU format, i.e. TensUnits (e.g. **#HJOL=12**)
The Tens may be left out if they equal zero (e.g. 8).
The programmed number of JOLLY hours will replace the hours or days set manually or through a SMS before.
The reply message will show the new value for HJOL.

- **#DJOL=**value

It will set the day value for the JOLLY program
The value will be written in the DU format i.e. TensUnits (e.g. **#DJOL=8**)
The Tens may be left out if they equal zero.
The programmed number of JOLLY days will replace the hours or days set manually or through a SMS before. The reply message will show the new value for DJOL.

K499Y001 ANOMALOUS BEHAVIOUR

→ NO REPLY TO THE COMMAND SMS

By ruling out the faults (which prove to be quite rare) – and considering a K499Y001 device powered through the mains – the reason will often lie in the lack of power supply. Please be reminded that the K499Y001 device may be supplied with an optional buffer battery which will, in this case, notify the lack of mains supply by means of the "SYSTEM POWER OFF. BLACKOUT!" message (refer to the K499Y001 manual).
The reply to the message might be received when the mains voltage is resumed, since the Service Centre will keep the undelivered SMS message stored into the memory for many days.

→ REPLY SENT ONLY WITH MESSAGE 2 (ALARM AND RELAY STATE)

The reason for this behaviour lies with the broken connection between the K499Y001 and the K490IY001: therefore, you should check the connections.

9 LEARN MORE ABOUT IT ...

FUNZIONAMENTO INVERNALE

The K490IY001 programmable thermostat provides for a system to SWITCH the boiler (or, depending on the individual systems, the pump, the burner or the water flow control valve) ON and OFF, so as to deliver hot water to the heating radiators or radiating panels only when the ambient temperature needs being increased.
The delivery will be interrupted only when the desired temperature is reached.
This section provides a detailed description for the programmable thermostat application relative to the most common case of rooms equipped with heating radiators.
The rooms equipped with floor heating systems require different programming, due to the system's different thermal inertia, since the floor heating systems make use of low-temperature water and require a significantly longer time in order for a room to be heated or cooled.
For this reason, it is recommended that you should contact your installer for better programming.

OPERATING PRINCIPLE

The K490IY001 programmable thermostat provides continuous measurements of the ambient temperature and compares the latter with the temperature you wish to have at the time. If the ambient temperature is lower than the desired one, the programmable thermostat will command the boiler to turn on and will keep the boiler activated until the ambient temperature reaches the value of the desired temperature.
The K490IY001 unit is connected, by means of two wires, with the boiler and the latter is controlled by means of a contact that will be opened (i.e. boiler switch-off) when the set temperature is reached (upper threshold) and will be closed (i.e. boiler switch-on) when the boiler has to generate heat after the temperature has fallen below the set value (lower threshold) by one tenth degree.
The radiators may be warm (or cold) at the times when the temperature goes down from the value above the threshold to the one below the threshold, i.e. when the boiler is off. Therefore, you need not be amazed if the radiators are not very hot at some times: this does not mean that the system will be malfunctioning. This may happen especially on the days when the outer temperature is not too cold.
In doubt, it is recommended that you should verify that the ambient temperature shown by the K490IY001 will be the desired one.

It is also recommended that you get a thermometer positioned at the most suitable place to measure the ambient temperature. The temperature shown by the programmable thermostat may be subjected to a measurement error due to a few factors, not only at the point where the recess box has been fitted but, and above all, in the wall recess position.
Therefore, the measured temperature will be affected to a large extent by the temperature of the wall itself, especially on the early days after the system has been reactivated in a flat that is not often inhabited: the wall temperature will go up much slower that the ambient air temperature.
The daily profile can be programmed in two main ways:

- WEEKLY MODE: this allows you to define a different temperature profile for every single week day, which will typically allow different programming between the work days (i.e. Mondays through Fridays), when you are usually away during the daytime and, therefore, the temperature may be kept at low values, and the holidays (i.e. on Saturdays and Sundays) when a higher temperature is required even during the daytime. This mode allows you to program every single day in a separate manner.
- DAILY MODE: this programming mode should be used when a flat is inhabited on a regular basis (e.g. as is the case with housewives, retired people, vacation homes, etc.) and, therefore, one single profile shall be programmed for all week days.

N.B. In case of a HEATING SYSTEM EQUIPPED WITH RADIATING PANELS, the daily programming cannot exhibit significant variations in a few hours, since the system's inertia is much greater than the one of an ordinary system equipped with heating radiators. Therefore, it is recommended that profiles featuring few daily variations should be used.

→

In case you wish to turn the system off (e.g. in case of a vacation home), you may set the K490IY001 to a state (referred to as "OFF") whereby you may choose from between the following options:

- the boiler will always be off; or
- the boiler will ensure a programmable anti-freeze temperature (it is recommended that it should be set to 5-6 ambient degrees) – please note that as regards the mountain resorts and places, where the temperature often falls below zero, water may freeze inside the pipes and, therefore, the latter may break.

In case you wish to manually set the desired temperature (to a fixed value) over a

24-hour period and for an indefinite period of time, you can use the program that causes the system to operate in manual mode (MANUAL).
If, on the contrary, you wish to make the system work at a desired, fixed temperature over a definite period of time, you can use the JOLLY program, by setting the number of hours during which this operating mode shall be active.

FITTING THE K490IY001 UNIT TO A RESIDENTIAL HOME

The K490IY001 programmable thermostat is a built-in unit (and, therefore, a very compact one). To ensure correct reading and programming, it can be installed at a height convenient for these operations, i.e. approximately 150-160 cm off the ground, bearing in mind that the temperature measured at such a height may be slightly higher than the reference ambient temperature. To this end, you may apply some correction to the measured temperature, so that the latter will reach the reference one.
As a rule, the programmable thermostat is placed in a central position in the flat, as far from cold spots (i.e. windows or doors), hot spots (i.e. heating radiators or cookers) and direct sunlight as possible, so as not to be affected to a large extent by these sources.

TEMPERATURE CONTROL IN OTHER ROOMS

The system behaviour is significantly affected by a number of factors, some of them related to the apartment construction project (e.g. wall and window insulation, heating radiator lay-out and radiating surfaces), some related to the heating system installation settings (e.g. the heating radiator water temperature). As a rule, these factors are not managed by the final user: they are managed by the designers and installers. However, the final user may have to control the temperature in different rooms by controlling one single thermostat (the K490IY001 unit itself), which is usually installed in the living-room. By assuming that the heating radiators in all rooms have been dimensioned properly, i.e. in such a manner that they ensure the same temperature in the entire apartment, the final user may need to have a different temperature control in the rooms other than the living-room.
To achieve a different temperature control in the other rooms, it is recommended that you should fit the radiators in such rooms with thermostatic valves (which, on the contrary, are of no use in the living-room where you will just have to adjust the available radiators by hand, by means of the upper and lower screw knob valves).
In particular, the thermostatic valves may come useful in the bedrooms where people do not live during the daytime and like it better to have, during the night, a lower temperature than the one set for the living-room.
If the temperature obtained in the bedrooms by means of thermostatic control is enough (the ordinary instance whereby a temperature not higher than the one set in the living-room is enough), you shall not take any action. Conversely, if the desired

temperature is not reached, it is recommended that you should partially close the valve (upper or lower valve) of the heating radiators in the living-room, in order to make the boiler work longer and, therefore, make the temperature go up in the other rooms.

EFFECT OF THE TEMPERATURE OF HOT WATER DELIVERY FROM THE BOILER

As we have pointed out above, the water temperature in the radiators will normally be adjusted by the installer according to the system dimensioning, depending on the apartment's heat dissipation and on how quickly you wish the ambient temperature change to occur.
The proper adjustment of such a temperature should allow the radiators to shift from a low temperature (e.g. during the night-time) to a higher one within a reasonable period of time.
An excessively low delivery temperature will prevent the desired temperature from being reached during the programmed time period. In fact, the calories supplied will be used in a twofold way, i.e. to make the temperature in the apartment go up and, at the same time, compensate for heat dissipation to the outside (heat demand).
To manage a profile of this type, which features variations by several degrees and bases the energy-saving element on reducing heat dissipation during the times when the difference between the inner temperature and the outer one is smaller, a water delivery temperature of approximately 70°C should therefore be applied.
Such temperatures will cause the heating radiators to be very hot, which will generate hot air (by convection) which will in turn cause the dust to move around in the apartment.

If, on the contrary, you wish to apply a lower delivery temperature (e.g. 50°C), you shall use a temperature profile that will keep a constant temperature as much as possible (i.e. keeping the same temperature all day round, at the most), so that the boiler shall only compensate continuously for the heat loss to the outside and shall never have to perform the heavy task of increasing the ambient temperature by several degrees. This profile is recommended especially for the condensing boilers, which work properly only when the return temperatures are low (and, therefore, with few transients).
In this case, it is recommended that the radiators should be over-dimensioned and, also, that a pump should be used, which should ensure a low fluid circulation speed in the system.
The decision on which method will definitely prove to be the most cost-effective one depends on a number of factors and shall be made by the final user.
In any case, it is recommended that the building insulation should be provided for

with great accuracy (with a particular regard to the door and window insulation): this will guarantee significant money-saving with regard to the heating costs.

SUMMER TIME OPERATION

The K490IY001 programmable thermostat (as described so far) is mainly used for winter temperature control, i.e. to control the heating boiler.
However, a command is available, which allows you to reverse the operation logic when the K490IY001 unit has to be used to manage a summer air-conditioning system: in this case, the K490IY001 shall close the air-conditioning system control contact (i.e. switching-on) when the temperature is higher than the set reference value, and shall open it (i.e. switching-off) when the temperature is lower.

Once this parameter has been set, the programming will be the same as the winter time operation (to which this manual refer, for the sake of simplicity).

The actuation differential for summer time operation is equal to ± 0.3°C.

MAINTENANCE

When the batteries need replacing (use two AAA mignon alkaline 1.5V batteries and replace them in a very short time), the programmed parameters will not be lost since all settings will be saved to a non-volatile memory (except for the date and time). Moreover, the K490IY001 unit will remain ON a few minutes (enough for the batteries to be replaced), even without the batteries (thanks to its low consumption and to a residual energy charge).
When the batteries have been replaced, the programmable thermostat shall be fitted in until it locks into the stop (the "battery down" symbol will go out the display).
If the symbols does not go out at once, wait a few minutes before doubting about the quality of the inserted batteries, then replace them again.

Please note that the state of the drive relay (the flame symbol is ON, or OFF) displayed on the disconnected K490IY001 unit will be the same as the one found at the time of disconnection, even if the programming has introduced a modification to this state. It will be updated when it is put back into place at the bottom.
As far as cleaning is concerned, only use a soft, dry cloth. Do not use water or any other liquid product.

WARNING!
The normal battery life exceeds one year, if the factory-set parameters are used and high quality batteries are used. It is recommended that you should replace the batteries at least once a year (at the beginning of the season when the unit is operated), to prevent them from running down when you are not at home.
Do not leave exhausted batteries inserted into the unit for a long time, since acid may leak from them, thus causing irreparable damage to the programmable thermostat.
To ensure proper disposal, the used batteries shall be discarded into special containers.

TECHNICAL FEATURES

Temperature adjustment scale	2-40°C, with increase by 0.1°C steps
Tambient measurement/displaying scale	-35 +60 °C
Power supply	230 V - 50 Hz
Max. power	5,5 VA
Connection with the boiler	By means of 3 screwed terminals (closed + open)
Contact capacity	5(3)A / 250 Vac
Type of action	1.B.U (micro-disconnection)
Software	classe A
Min. control differential	0,1°C
Thermal reference gradient	4K/h
Max. ambient temperature	T45
Electrical insulation	⧈ double insulation
Degree of protection	IP20
Degree of pollution	2
Pulse voltage	4000V
Connection with the K499Y001/K499Y001A phone activator	screw terminals
Conforming to	EN 60730-1 Standards (and second parts)
Mounting	Built into boxes featuring 3 modules (type 503), by means of two screws
Dimensions (body + bottom)	68 x 52,5 x 58 mm
Product not manufactured in Italy	

*The battery life refers to the case of normal operation, with the factory-set parameters.

GIACOMINI
WATER E-MOTION

CE

Prodotto progettato per Giacomini S.p.A. da F.C.
via dell'Osio N. 6 - 20090 Caleppio di Settala (Italia).
Non assemblato in Italia.

Additional information

For additional information please check the website www.giacomini.com or contact the technical service:
☏ +39 0322 923372
🖷 +39 0322 923255
✉ consulenza.prodotti@giacomini.com

Giacomini S.p.A. Via per Alzo, 39 - 28017 San Maurizio d'Opaglio (NO) Italy

January 2015

GIACOMINI
WATER E-MOTION

INSTRUCTION
FLUSH MOUNTING WEEKLY PROGRAMMABLE THERMOSTAT
K490IY002

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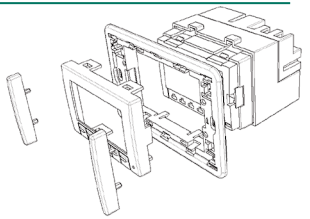
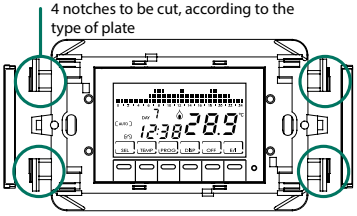


1 INSTALLATION

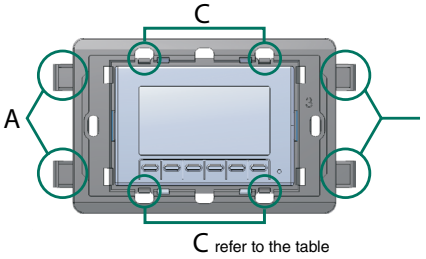
The K490IY002 programmable thermostat shall be installed in a 3-module recess box, in a central area of the flat, 1.5 m above the ground, if possible. Depending on the desired plates, the necessary components (included in the package) shall be used in accordance with the table below.

COMPATIBLE PLATES	STANDARD COVER*	STANDARD FRAME	SIDE ADAPTORS*	NOTCHES TO BE REMOVED
Bticino Living International e Transizione Piana	B	1	NO	NO
Bticino Living Light Air	B	3	NO	YES position "A+C"
Bticino Light, Light tech	B	1	NO	NO
Bticino Axolute	A	1	NO	NO
Bticino Matix	B	2	YES (dedicated)	YES position "A"
Vimar Idea e Rondò	B	2	YES	YES position "B"
Vimar Plana e Eikon	B	1	NO	NO
Vimar Eikon Evo	A	3	NO	YES position "A"
Vimar Arké	A	3	NO	NO
Gewiss Chorus One, Lux, Art	B	2	NO	YES position "A"
Ave sistema 45: Zama, Banquise, Yes, Ral	B	2	YES	NO
Ave sistema 44: Zama, Personal, Tecnopolimero	A	1	NO	NO
Legrand Cross, Vela quadra, Vela tonda	B	2	NO	YES position"A"

N.B. Available colours: white, silver and black (cover "B"); white, silver and black (cover "A")



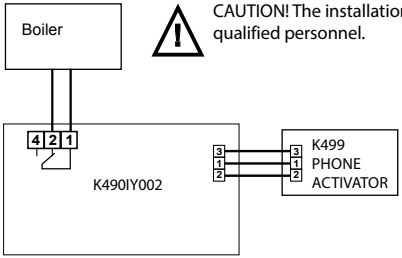
STANDARD SIDE ADAPTORS



CARRY OUT THE OPERATIONS BELOW:

- → remove, if required, the notches (according to the type of plate)
- → fit, if required, the side adaptors into position
- → secure the bottom to the proper frame
- → connect, with the bottom, the two boiler connecting wires and the three wires (if any) connecting with the K499Y001 (refer to "Electric connections", page 4)
- → screw the frame down to the box by means of the available screws
- → fit the cover onto the programmable thermostat body
- → fit the plate into position
- → insert the programmable thermostat and verify that it can be put in and removed easily, by simultaneously pressing the two cover sides.

2 ELECTRIC CONNECTIONS



CAUTION! The installation shall be carried out by qualified personnel.

N.B. When the K490IY002 is switched off, the boiler contact will remain in the same position.

3 INSERTING AND REMOVING THE BATTERIES

Insert two alkaline, high-quality long-life AAA (mignon) 1.5 V batteries, paying attention to the correct polarity.
N.B. The battery life will be significantly affected by the type of use and the user settings (especially with regard to the display brightness).

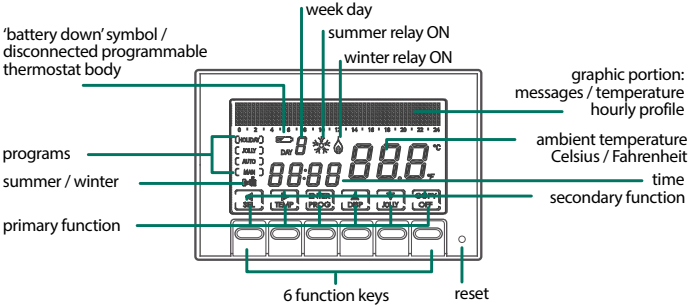
When the batteries are down, the 'battery down' symbol will blink on the display:

The K490IY002 works correctly, yet the display will not light up. If the batteries are fully down, the programmable thermostat will stop working (the system will be switched off) and the "**Batteries!!**" message will display until the batteries are replaced.
To replace the batteries, take the K490IY002 off its seat by gently and simultaneously pressing inwards on both of the cover sides. After the programmable thermostat has been turned off, the "**Disconnected**" message will display for one minute and the battery symbol will blink (the battery symbol will also blink, though in a different way, even when the batteries are live, to inform that the programmable thermostat body is disconnected from the bottom). The "**Disconnected**" message will go out when a button is pressed.
All parameters will remain stored in the memory when the batteries are replaced.

4 A QUICK GUIDE TO PROGRAMMING

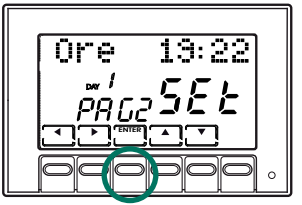
DESCRIPTION OF THE BUTTONS

The programmable thermostat features six buttons, the functions of which change depending on the situations and are described by the symbols shown on the displays next to the buttons themselves.



N.B. Pressing a button for the first time will have no effect – it will only turn the display light on, to allow you to better view the display.

TIME AND DATE SETTINGS



After powering on, briefly press the PROG button: the "Setup" message will display. Now, press ▶, to go to the "Hours" page; use the ▲ and ▼ buttons to set the time (hours), then press ▶ to set the "Minutes".

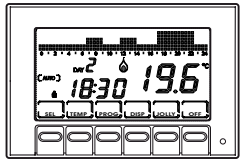
Press ▶ again to select the Year, Month and Day in turn.
By pressing ▶ again, you can decide on whether the automatic solar/summer time change should be disabled (this function will be active at first, yet you can deactivate it by selecting "NO " by means of the ▲ and ▼ buttons).
You can always go back to the previous page by pressing ◀.
Press **ENTER** to exit the Setup menu.

OPERATION PROGRAMS

The K490IY002 programmable thermostat provides for different operating modes (i.e. programs):

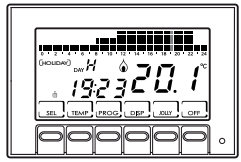
- "AUTO" WEEKLY PROGRAM:

One of the four programmable temperatures can be associated to each half an hour's time period, for each day of the week. This program will be displayed when the programmable thermostat is switched on and, as a rule, is the one most commonly used.



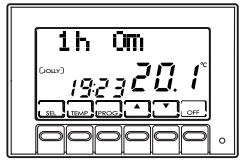
- "HOLIDAY" DAILY PROGRAM:

You can select, just like with the "AUTO" program, one of the four programmable temperatures associated to each half an hour's time period, yet this sequence will be repeated the same every day.



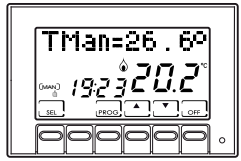
- "JOLLY" TEMPORARY PROGRAM:

You may choose to keep a given temperature over a certain number of hours; then, the previously active program will be resumed.



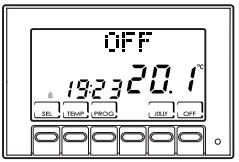
- "MAN" MANUAL PROGRAM:

The programmable thermostat will be set to a fixed temperature (to be specified each time) over an unlimited time, until another program is selected.



- SYSTEM OFF OR SET TO THE ANTI-FREEZE PROGRAM ("OFF/ANTI-FREEZE"):

The system will remain OFF or, as an alternative, will keep a very low temperature (2°C to 7°C), to prevent the fluid from freezing in the heating system.



POSSIBLE TEMPERATURE SETTINGS

The AUTO and HOLIDAY programs allow you to set four different temperatures and, also, select one of them for every half an hour's time period during the day. Three of these temperatures (T1, T2 and T3) may range from 2°C to 40°C, whereas the fourth (T) anti-freeze temperature (TA) may range between 2°C and 7°C or may be set to "OFF" (i.e. the system will be disconnected).
The MANUAL program features a specific temperature of its own (TMan), and so does the JOLLY program (Tj): both of these temperatures will be set in their respective screenshots and may range between 2°C and 40°C.
The ANTI-FREEZE /OFF program will instead follow the TA temperature (which may range between 2°C and 7°C); as an alternative, it may be set to "OFF", which will cause the system to be fully switched off.

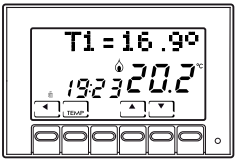
SETTING THE OPERATION PROGRAMS

→ SELECTING A PROGRAM

By pressing the **SEL** button, the various operating programs will be selected in a cyclic sequence: AUTO > MAN > OFF > HOLIDAY > AUTO.
NOTE. The JOLLY temporary program is not included in the program sequence: it can be selected directly by means of the JOLLY button.

→ SETTING THE TEMPERATURES

Press, with the AUTO, HOLIDAY and OFF programs, the **TEMP** button to change the values for the four programmable temperatures. By pressing the **TEMP** button several times, the T1, T2, T3 and Ta values will display in a sequence: go to the T you wish to modify, then use the ▲ and ▼ arrows to increase or decrease the temperature by one tenth degree at a time. You can go back to the initial state by means of the ◀ arrow. Please be reminded that T1 will always be less than or equal to T2, whereas T2 will always be less than or equal to T3.



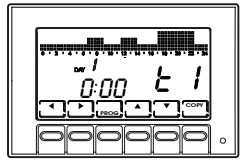
With the JOLLY program, the TEMP button will alternate the display of the set temperature (Tj) with the hours left to the end of the program: both of these values can be changed by means of the ▲ and ▼ buttons.
With the MAN program, you can change the fixed temperature (Tman) by means of the ▲ and ▼ buttons.

→ CHANGING THE CURRENT DATE AND TIME

Briefly press the **PROG** button to enter the "Setup" menu, which will allow you to change the time, date, winter/summer operation and the automatic summer time function.

→ CUSTOMIZING THE "AUTO" WEEKLY PROGRAMMING AND THE "HOLIDAY" DAILY PROGRAMMING

Keep the PROG button depressed until the "Config" message is displayed. This menu allows you to program the weekly profile (AUTO program) and daily profile (HOLIDAY program) and, also, set the advanced functions (refer to the next sections for a description of these functions).



NOTE: If the "Setup" message is displayed instead of "Config", the button has been pressed too briefly: you shall press **ENTER** to go back to the normal operating state and, then, try again

When you enter the "Config" menu, a page will be displayed, which will allow you to select the desired temperature (T1/T2/T3/Ta) for each half an hour's time period of the specified day (i.e. 1 to 7, indicating the week days from Monday till Sunday).

N.B. The T1/T2/T3/Ta temperatures will be shown in the right portion of the display together with the symbols t1 - t2 - t3 - tA

The ▶ and ◀ buttons allow you to move, by half an hour's time fractions, either to the right or to the left.
The ▲ and ▼ buttons allow you to move from a programmed temperature to another temperature.

By pressing **PROG** briefly, you will move to the following day (DAY 1 > 2 > 3 > 4 > 5 > 6 > 7> H).
Press the **COPY** button to copy the temperature profile of the current day to the following day.

After H (HOLIDAY daily program profile), you will go to the 'Correct' parameter page.

By pressing **PROG** longer or pressing ◀ at the beginning of day 1, you will go immediately to the 'Correct' page.
From the 'Correct' page on, pressing **ENTER** will exit the "Config" menu.

→ SETTING THE "JOLLY" PROGRAM

By pressing the **JOLLY** button with all programs (except for MAN), the temporary program will be selected: this program allows you to define the desired temperature and the time duration (hours) of the same (up to 240 hours, i.e. 10 days max.). For instance, you may find it useful to keep a lower temperature during the weekend, when you are away.
After you have entered this program, you can change the time period (which has initially been set to one hour) and increase the number of hours by means of the ▲, button (or decrease them by means of the ▼ button).
By pressing **TEMP** you can display and change temperature Tj, by means of the ▲ and ▼ buttons.
By pressing **TEMP** again, the JOLLY program time period will be displayed again.
When this time period expires, you will go back to the start program.

→ SETTING THE "OFF/ANTI-FREEZE" PROGRAM

By pressing the **OFF**, button with any operating program, the programmable thermostat will go to the 'OFF/Anti-freeze' state.
The anti-freeze temperature (Ta) can be programmed by means of the **TEMP**, button, from an OFF value (i.e. the boiler will always be OFF) to a range of 2.0°C to 7.0°C (to an accuracy level of one tenth degree), by means of the ▲ and ▼.
You can go back to the OFF state by means of the ◀ arrow.
By pressing the OFF button again, you will go back to the previous operating state.

→ ALTERNATIVE DISPLAYING

With the AUTO and HOLIDAY programs, you can display other information instead of the temperature profiles, by pressing the **DISP** button several times.
When pressing the button for the first time, the temperature programmed for the current half an hour's time period will display; when pressing the button for the second time, the "enlarged" temperature profile (i.e. from one hour until three hours past the current half an hour's time period) will display; when pressing the button for the third time, the date will display. Finally, when the button is pressed for the fourth time, you will go back to the initial temperature profile.

5 FUNCTION DETAILS

AVAILABLE PROGRAMS

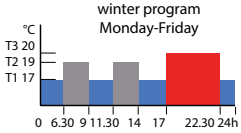
The K490IY002 features different operating modes (i.e. programs):

- "AUTO" weekly program
- "HOLIDAY" daily program
- "JOLLY" temporary program
- "MAN " manual program
- System OFF or set to the anti-freeze program ("OFF")

→ "AUTO" WEEKLY PROGRAM

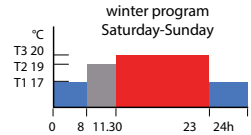
With the AUTO operating mode, you can use four temperature levels (Ta, T1, T2 and T3), according to a programming schedule based on 30-minute steps, on a 24-hour basis, seven days a week. Days are numbered 1 to 7 and correspond to the seven week days (starting from Monday).
In order to make the programming easier, you can set the first day and copy it to the following days. The default setting for days 1-5 (i.e. Monday through Friday) is as follows:

00:00 – 06:30 T1
06:30 – 09:00 T2
09:00 – 11:30 T1
11:30 – 14:00 T2
14:00 – 17:00 T1
17:00 – 22:30 T3
22:30 – 24:00 T1



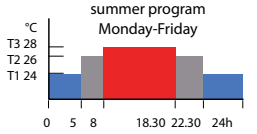
Conversely, the default setting for days 6 and 7 (i.e. Saturday and Sunday) is as follows:

00:00 – 08:00 T1
08:00 – 11:30 T2
11:30 – 23:00 T3



23:00 – 24:00 T1

The values for the four temperatures can be programmed by means of the TEMP function. The temperature profile (hourly variation) can be programmed by means of the PROG function

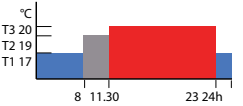


In case of summer operation (i.e. conditioning), the default program will be the one shown in the figure

→ "HOLIDAY" DAILY PROGRAM

With the HOLIDAY operating mode, you can use the four temperature levels according to a programming schedule based on 30-minute steps, on a 24-hour basis. Therefore, you will achieve a daily programming (regardless of the week days). The default temperature profile will be as follows:

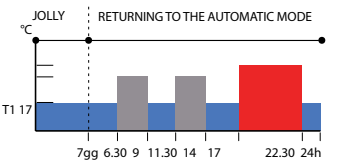
00:00 – 08:00 T1
08:00 – 11:30 T2
11:30 – 23:00 T3
23:00 – 24:00 T1



The temperature values can be programmed by means of the TEMP function.
The temperature profile (hourly variation) can be programmed by means of the PROG function.

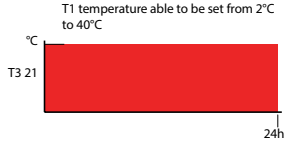
→ JOLLY

The JOLLY mode allows you to set a programmable temperature (Tj) over a programmable number of hours (1 to 240). It can be used when you wish to introduce a temporary programming change without modifying the programming parameters, e.g. to keep a high temperature over a longer time in the evening (when you host friends at home) or keep a lower temperature during a weekend when you are away from home. If you have entered the JOLLY mode by using the dedicated function button, you will (upon the expiry) go back automatically to the current programming.



→ MANUAL

The MAN mode allows you to manually set a fixed temperature (Tman), ranging between +2.0°C and +40.0°C, with no expiry and without changing the weekly or daily programming.
It can be used, for instance, to keep a different temperature from the daily programming ones when nobody is at home, or to remotely switch the system on and cause the latter to reach a steady temperature.



→ OFF

The OFF mode shall be used when you wish to turn the system off.
This mode makes use of the TA (anti-freeze) temperature as a reference, in order to guarantee the system protection at low temperatures.
The TA temperature is usually set to +5°C, yet it can be set to OFF, thus causing the boiler to be fully switched off. The weekly or daily programming will not change.

POSSIBLE TEMPERATURE SETTINGS

The system provides for four different temperature levels: three levels for normal operation, and one level ("anti-freeze") to be used when you wish to keep the boiler OFF, yet without taking the risk of system fluid freezing.
The programming for the three temperatures ('T') will be subjected to their mutual values, i.e. T1 cannot exceed T2, T2 cannot exceed T3 or be less than T1, and T3 cannot be less than T2.
Therefore, greatest care shall be taken when programming (by making use of the **TEMP** button).

T1 will range between +2.0 and +T2 degrees, with variations every one tenth degree [default value: 17.0]
T2 will range between +T1 and +T3 degrees, with variations every one tenth degree [default value: 19.0]
T3 will range between +T2 and +40.0 degrees, with variations every one tenth degree [default value: 20.0]
TA ("anti-freeze") will range between +2.0 and +7.0 degrees, with variations every one tenth degree, or it can be OFF, i.e. the boiler will always remain OFF [default value: 5.0].

ADVANCED FUNCTIONS AND BUTTONS

■ USING THE **SEL** BUTTON

The **SEL** button allows you to select the programmable thermostat operating mode, according to the programs below:

→ HOLIDAY
→ AUTO
→ MANUAL
→ OFF

To change the chosen program, you shall press the **SEL** button in a cyclic sequence. The first three states will be indicated by a small writing on the left of the display, whereas the OFF state will be shown in the graphic area at the top.

■ USING THE **TEMP** BUTTON

→ AUTO, HOLIDAY and OFF modes:

By pressing the **TEMP** button, you will access the programming for the four temperatures that can be used with the above-mentioned states.

The ▲ and ▼ arrows allow you to change the temperatures, subject to the constraint that T1 cannot exceed T2, T2 cannot be less than T1 and higher than T3, and T3 cannot be less than T2.

The **TEMP** button allows you to go to the next temperature (cyclic sequence) T1>T2>T3>Ta>T1. By pressing the ◀ arrow, you will go back to the start window.

→ JOLLY mode

By pressing the **TEMP** button, you will alternately shift from programming the Tj temperature to the one for the Jolly time period (i.e. 0 to 240 hours, equal to 10 days).

The ▲ and ▼ buttons allow you to modify Tj (between +2°C and +40°C) as well as the time (1 hour's steps).

■ USING THE **PROG** BUTTON

→ **PROG** (press briefly) > SET UP

→ Winter/PAG 1/Set
By pressing ▲ or ▼ you will shift from Winter to Summer, and vice versa.
By pressing ▶ the page will change; by pressing **ENTER** you will exit the **PROG**.

→ Hours HH (blinking): MM /PAG2/Set
By pressing ▲ you will cyclically increase the hours, by pressing ▼ you will cyclically decrease the hours.
By pressing ▶ the page will change; by pressing **ENTER** you will exit the **PROG**.

→ Min. HH:MM (blinking) /PAG 3/Set
By pressing ▲ you will cyclically increase the minutes; by pressing ▼ you will cyclically decrease the minutes.
By pressing ▶ the page will change; by pressing **ENTER** , you will exit the **PROG**.

→ Year: YYYY /PAG 4/Set
By pressing ▲ you will increase the years; by pressing ▼ you will decrease the years.
By pressing ▶ the page will change; by pressing **ENTER** you will exit the **PROG**.

→ Month: MM /PAG 5/Set
By pressing ▲ you will cyclically increase the months; by pressing ▼ you will cyclically decrease the months.
By pressing ▶ the page will change; by pressing **ENTER** you will exit the **PROG**.

→ Day: DD /PAG 6/Set
By pressing ▲ you will cyclically increase the days; by pressing ▼ you will cyclically decrease the days.
By pressing ▶ sthe page will change; by pressing **ENTER** you will exit the **PROG**.
NOTE. When the date has been set, the programmable thermostat will automatically determine the week day.

→ Sum Time YES /PAG 7/Set
This will select the summer time automatically (applicable to European countries and some more countries). This setting allows you to have the time updated automatically when the winter/summer time changes (i.e. in March and October). By pressing ▲ or ▼ you will change from YES to NO. By pressing ▶ you will go back to page 1 (Winter/Summer); by pressing **ENTER** , you will exit the **PROG**.

→ **PROG** (press longer) -> CONFIG.

The day 1 display will be shown, with the temperature chart every half an hour, the half an hour indication and the associated temperature (t1 - t2 - t3).- tA
Day 1 will correspond to Monday, and so on. Day 'H' will be a Holiday, which will not change during the week.
By pressing ▶ you will move forward by half an hour.
By pressing ▲ or ▼ you will move up or down from tA to t1 to t2 to t3.
By pressing **PROG** briefly, the day will change (1, 2, 3, 4, 5, 6, 7, H).
After 'H', you will go to page 2 (Correct).
By pressing **PROG** (longer), you will immediately go to page 2.
By pressing **COPY** you can copy the temperature profile for the current day to the following day.
By pressing **ENTER** from page 2 on, you will exit the programming.
By pressing ◀ you will go back to the preceding half an hour (even of the previous day).
By pressing ◀ at the beginning of day 1, you will immediately go to page 2.

→ Correct/PAG 2/XX.X°
It allows you to modify the measured temperature which might, due to the unit having been fitted to a wall recess and at an inappropriate height, not show the real perceived temperature.
It is recommended that the unit should be calibrated by comparison with a thermometer placed at the desired zone/height.
By pressing ▲ and ▼ you will change the value on the temperature display.
By pressing ▶ $$, you will go to page 3; by pressing **ENTER** you will exit.

→ Celsius/PAG 3/XX.X°
It allows you to select the temperature displaying scale, by choosing from between Celsius degrees and Fahrenheit degrees.

By pressing ▲ or ▼ you will change from Celsius to Fahrenheit.
By pressing ▶ you will go to page 4; by pressing **ENTER** you will exit.

→ Light OFF-ON Xs/PAG 4/con
It allows you to adjust the display back-lighting (blue light). You can choose not to have the display back-lighting (OFF) or have it over a programmable time (1 to 9 seconds) or have it all the time (ON).
When the back-lighting has been set to "always ON" or "always OFF", you can activate the various functions by simply pressing the buttons once.
By pressing ▲ or ▼ you will change from OFF to ON and, also, you can select the time period (1 to 9 seconds, always ON). By pressing ▶ you will go to page 5; by pressing **ENTER** you will exit.

→ Light Bright X/PAG 5/con
It allows you to modify the display brightness (according to 9 levels).
By pressing ▲ or ▼ you will change the brightness level (1-9).
By pressing ▶ you will go to page 6; by pressing **ENTER**, you will exit
Please note that the more intense the display brightness, the greater the current consumption will be (and, therefore, the less the battery life).

→ Italian/PAG 6/con
It allows you to change the language used for programming.
By pressing ▲ or ▼ you will cyclically change from one language to another one. By pressing ▶ you will go to page 8; by pressing **ENTER**, you will exit.

→ Lock? NO (YES)/PAG 8/con
It allows you to lock the keypad, by means of an alphanumeric 4-digit code.
It will work only once; after that, it shall be enabled again
By pressing ▲ or ▼ you will change from NO to YES; then, by pressing **ENTER** the password will be required, which shall be entered by means of the ▲ or ▼, arrow, by selecting the digits by pressing ▶ and ◀
Pressing ENTER will store the password into the memory and you will go back to the normal operation display, where only the **ENTER f**unction button will be available. By pressing this button you will be asked to enter the password, by means of the ▲ and ▼, arrows and by pressing **ENTER** after that. The display will go back to the normal programming, thus allowing all functions to be performed.
By pressing ▶ you will go to page 9; by pressing **ENTER** you will exit.

→ Reset? NO (YES)/PAG 9/con
By pressing ▲ or ▼you will change from NO to YES. By pressing **ENTER,** while "YES" is being displayed, all parameters (except for the date and the time) will be reset to the factory default values.
By pressing ▶ you will go to page A; by pressing **ENTER** you will exit.

→ K490IY002 vX.Y/--/con
It allows you to display the K490IY002 programmable thermostat software release.
By pressing **ENTER**, you will exit and go back to the normal operation page.
By pressing ▶ you will go back to the hourly profile programming (page 1).

■ USING THE **DISP** BUTTON

The **DISP** button allows you to display (only in the AUTO and HOLIDAY states) some windows showing miscellaneous information, which will depend also on the operating state.

Below are the windows that can be displayed:
→ Day profile / hour:minute / Tamb
→ Current temperature set (e.g. T3=20.0°) / hour:minute /Tamb
→ 4-hour profile (-1+3) / hour:minute / Tamb
→ DD/MM/YYYY / hour:minute /Tamb

■ USING THE **JOLLY** BUTTON

The **JOLLY** button allows you to replace the normal operation with the temperature forcing to a fixed value over a preset time interval. The displayed window is shown below:

→ JOLLY state time period (HH h MM m) / hour:minute / Tamb
You can change the JOLLY state time period (by 1-hour steps) by means of the ▲ and ▼ arrows. The Jolly temperature can be set by pressing the **TEMP**,button, which will display a window similar to the one below:

→ Tj=xx.x° / hour:minute / Tamb
This window will be shown on the display until you press the **TEMP** button again: in this case, you will go back to the previous display indicating the state time period.
To exit the JOLLY state before the latter expires, you can set the number of hours back to zero by means of the ▼ arrow and wait one minute, to go back automatically

to the original state, or you may change, by means of the **SEL** button, to the desired operating state, according to the AUTO / MAN / HOLIDAY / OFF cycle.

- USING THE **OFF** BUTTON

The **OFF** button allows you to set, in any operating state, the system to the switch-off state. The window below will be displayed:

→ OFF / hour:minute / Tamb

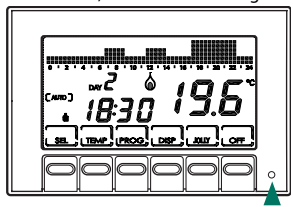
The anti-freeze temperature (Ta) can be programmed by means of the TEMP button, from the OFF value (i.e. the boiler will always be OFF) to a range of 2,0°C to 7,0°C (to an accuracy level of one tenth degree), by means of the ▲ and ▼. The window below will be displayed:

→ Ta=x.x° / ora:min / Tamb

By keeping the arrow depressed a long time, the value will quickly and automatically increase or decrease. Press the ◀ arrow to go back to the OFF window.
By pressing the **OFF** button again, you will go back to the previous operating state.

RESET

Due to unpredictable and unusual events, the unit might need re-starting (e.g. in case of a block following heavy electromagnetic disturbance). In such a case, instead of removing the batteries and waiting for the programmable thermostat to be switched off in a "natural" manner, you can act more quickly by pressing the small round button (RE-START) found inside the unit (at the lower right-hand edge) by using a clip or a pin. The unit will be started again and the CH141 message will be displayed a few seconds; then, the unit will reach the AUTO state.



All of the previous configuration will be kept, ue to its having been stored by the programmable thermostat.
The date and clock will as a rule not be modified.
If, on the contrary, you wish to restore the factory programming, the system can be reset by means of the special RESET command, available in PROG /CON FIG, from which you will exit to the AUTO state. In this case, all of the user's settings and customization will be lost and will be replaced with the factory ones, except for the date and time.

6 REMOTE PROGRAMMING BY MEANS OF K499Y001

The K490IY002 unit can be conveniently supplied with the K499Y001 phone activator (to be purchased separately), connected with a GSM mobile telephone network.

Using the K499Y001 phone activator will allow you to:

- check the temperature in the home;
- program the temperature in the home;
- receive notifications of the state changes affecting the two alarm contacts (e.g. a boiler alarm, a burglar alarm, a low temperature alarm indicating some boiler malfunction, a sewage tank overflow alarm, and so on);
- turn on/off an external load operating at 230 VAC / 500 W (e.g. the irrigation system) by means of an internal relay;
- notify the lack of 230 V power supply (if a connection with an external optional battery is available).

This appendix deals with the ambient temperature control in connection with the K490IY002 programmable thermostat. As regards the alarm management and the unit installation, reference should be made to the K499Y001 device manual.

The K499Y001 activator connected with the K490IY002 unit allows a remote user to send a SMS enabling the same to be informed about the current system state or command the state to be reached.

The “Remote Command Received” message will appear several times on the K490IY002 display during the entire remote control management.

SMS COMMANDS

Below are the SMS messages that can be used to control the K490IY002 unit:

- **#STATUS** this allows you to be informed about the state of the K490IY002 unit, of the alarms and the relay

When this message is sent, the K499Y001 will reply, in less than one minute, by sending two state SMS's including the data below (the example refers to the real operation in the AUTO mode):

→ MESSAGE 1

TAMB=22.9	current ambient temperature reading
T1=17.0	temperature set T1
T2=19.0	temperature set T2
T3=23.0	temperature set T3
TOFF=5.0	temperature set T (Anti-freeze)
TMAN=16.5	temperature set T (Manual)
TJOL=19.0	temperature set T (Jolly)
HJOL=1	Jolly program duration hours
DJOL=0	Jolly program duration days
PROGRAM=AUTO	program set on the K490IY002 unit
REMOTE= ---	remotely set program (--- : none)
PLANT=OFF	programmable thermostat relay state
BATT=HI	K490IY002 battery state

→ MESSAGE 2

INPUT1=OFF	alarm 1 state
INPUT2=OFF	alarm 2 state
OUTPUT=OFF	K499Y001 relay state

This will be the standard replay to every single message sent.

Below are only the rows differing from the message shown above:

- **#FROST** this will set the anti-freeze program, i.e. it will set the system to OFF. The reply message will read as follows:

  PROGRAM=OFF
  REMOTE=OFF

The K490IY002 display will blink to OFF (the OFF message will light up steady if the SEL setting has been made).

- **#RESUME** this command will be used to go back from the state sent by means of the remote control to the state set on the K490IY002 unit.

The reply message will read as follows:

```
PROGRAM=AUTO
REMOTE= ---
```

The K490IY002 display will go back to the AUTO state.

- **#MAN** this command will be used to set the MANUAL state with the TMan set on the K490IY002 unit (available in the state message)

The reply message will read as follows:

```
PROGRAM=MANUAL
REMOTE=MANUAL
```

The K490IY002 display will read the MAN state (it will blink, to indicate the remote setting) as well as TMan=16.5.

- **#ECONOMY** this command will be used to set the MANUAL state with TMan equal to T1 (available in the state message)

The reply message will read as follows:

```
PROGRAM=MANUAL
REMOTE=ECONOMY
```

The K490IY002 display will read the MAN state (it will blink, to indicate the remote setting) as well as TM an=17.0, coinciding with T1.

- **#COMFORT** this command will be used to set the MANUAL state with TMan equal to T3 (available in the state message).

The reply message will read as follows:

```
PROGRAM=MANUAL
REMOTE=COMFORT
```

The K490IY002 display will read the MAN state (it will blink, to indicate the remote setting) as well as TM an=20.0, coinciding with T3.

- **#AUTO** this command will be used to set the AUTO state (weekly programming).

The reply message will read as follows:

```
PROGRAM=AUTO
REMOTE=AUTO
```

The K490IY002 display will read the AUTO state (it will blink, to indicate the remote setting).

- **#HOL** chis command will be used to set the HOLIDAY state (daily programming)

The reply message will read as follows:
```
PROGRAM=HOLIDAY
REMOTE=HOLIDAY
```
The K490IY002 display will read the HOLIDAY state (it will blink, to indicate the remote setting).

- **#JOL** this command will be used to set the Jolly state

The reply message will read as follows:
```
PROGRAM=HOLIDAY
REMOTE=HOLIDAY
```
The K490IY002 display will read the Jolly state (it will blink, to indicate the remote setting).

- **#T1=**value

It will set the temperature value for T1
The value will be written in the DU.d format, i.e. TensUnits.decimal (e.g. **#T1=19.2**)
The Tens may be left out (e.g. 9.0). The reply message will show the new value for T1.

- **#T2=**value

It will set the temperature value for T2
The value will be written in the DU.d format, i.e. TensUnits.decimal (e.g. **#T2=20.4**)
The Tens may be left out (e.g. 9.0). The reply message will show the new value for T2.

- **#T3=**value

It will set the temperature value for T3
The value will be written in the DU.d format, i.e. TensUnits.decimal (e.g. **#T3=24.3**)
The Tens may be left out (e.g. 9.0). The reply message will show the new value for T3.

- **#TMAN=**value

It will set the temperature value for the MANUAL program
The value will be written in the DU.d format, i.e. TensUnits.decimal (e.g. **#TMAN=22.0**).
The Tens may be left out (e.g. 9.0). The reply message will show the new value for TMAN.

- **#TJOL=**value

It will set the temperature value for the JOLLY program
The value will be written in the DU.d format, i.e. TensUnits.decimal (e.g. **#TJOL=24.0**)
The Tens may be left out (e.g. 9.0). The reply message will show the new value for TJOL.

- **#HJOL=**value

It will set the hour value for the JOLLY program
The value will be written in the DU format, i.e. TensUnits (e.g. **#HJOL=12**)
The Tens may be left out if they equal zero (e.g. 8).
The programmed number of JOLLY hours will replace the hours or days set manually or through a SMS before.
The reply message will show the new value for HJOL.

- **#DJOL=**value

It will set the day value for the JOLLY program
The value will be written in the DU format i.e. TensUnits (e.g. **#DJOL=8**)
The Tens may be left out if they equal zero.
The programmed number of JOLLY days will replace the hours or days set manually or through a SMS before. The reply message will show the new value for DJOL.

K499Y001 ANOMALOUS BEHAVIOUR

→ NO REPLY TO THE COMMAND SMS

By ruling out the faults (which prove to be quite rare) – and considering a K499Y001 device powered through the mains – the reason will often lie in the lack of power supply. Please be reminded that the K499Y001 device may be supplied with an optional buffer battery which will, in this case, notify the lack of mains supply by means of the "SYSTEM POWER OFF. BLACKOUT!" message (refer to the K499Y001 manual).
The reply to the message might be received when the mains voltage is resumed, since the Service Centre will keep the undelivered SMS message stored into the memory for many days.

→ REPLY SENT ONLY WITH MESSAGE 2 (ALARM AND RELAY STATE)

The reason for this behaviour lies with the broken connection between the K499Y001 and the K490IY002: therefore, you should check the connections.

9 LEARN MORE ABOUT IT ...

FUNZIONAMENTO INVERNALE

The K490IY002 programmable thermostat provides for a system to SWITCH the boiler (or, depending on the individual systems, the pump, the burner or the water flow control valve) ON and OFF, so as to deliver hot water to the heating radiators or radiating panels only when the ambient temperature needs being increased.
The delivery will be interrupted only when the desired temperature is reached.
This section provides a detailed description for the programmable thermostat application relative to the most common case of rooms equipped with heating radiators.
The rooms equipped with floor heating systems require different programming, due to the system's different thermal inertia, since the floor heating systems make use of low-temperature water and require a significantly longer time in order for a room to be heated or cooled.
For this reason, it is recommended that you should contact your installer for better programming.

OPERATING PRINCIPLE

The K490IY002 programmable thermostat provides continuous measurements of the ambient temperature and compares the latter with the temperature you wish to have at the time. If the ambient temperature is lower than the desired one, the programmable thermostat will command the boiler to turn on and will keep the boiler activated until the ambient temperature reaches the value of the desired temperature.
The K490IY002 unit is connected, by means of two wires, with the boiler and the latter is controlled by means of a contact that will be opened (i.e. boiler switch-off) when the set temperature is reached (upper threshold) and will be closed (i.e. boiler switch-on) when the boiler has to generate heat after the temperature has fallen below the set value (lower threshold) by one tenth degree.
The radiators may be warm (or cold) at the times when the temperature goes down from the value above the threshold to the one below the threshold, i.e. when the boiler is off. Therefore, you need not be amazed if the radiators are not very hot at some times: this does not mean that the system will be malfunctioning. This may happen especially on the days when the outer temperature is not too cold.
In doubt, it is recommended that you should verify that the ambient temperature shown by the K490IY002 will be the desired one.

It is also recommended that you get a thermometer positioned at the most suitable place to measure the ambient temperature. The temperature shown by the programmable thermostat may be subjected to a measurement error due to a few factors, not only at the point where the recess box has been fitted but, and above all, in the wall recess position.
Therefore, the measured temperature will be affected to a large extent by the temperature of the wall itself, especially on the early days after the system has been reactivated in a flat that is not often inhabited: the wall temperature will go up much slower that the ambient air temperature.
The daily profile can be programmed in two main ways:

- WEEKLY MODE: this allows you to define a different temperature profile for every single week day, which will typically allow different programming between the work days (i.e. Mondays through Fridays), when you are usually away during the daytime and, therefore, the temperature may be kept at low values, and the holidays (i.e. on Saturdays and Sundays) when a higher temperature is required even during the daytime. This mode allows you to program every single day in a separate manner.
- DAILY MODE: this programming mode should be used when a flat is inhabited on a regular basis (e.g. as is the case with housewives, retired people, vacation homes, etc.) and, therefore, one single profile shall be programmed for all week days.

N.B. In case of a HEATING SYSTEM EQUIPPED WITH RADIATING PANELS, the daily programming cannot exhibit significant variations in a few hours, since the system's inertia is much greater than the one of an ordinary system equipped with heating radiators. Therefore, it is recommended that profiles featuring few daily variations should be used.

→

In case you wish to turn the system off (e.g. in case of a vacation home), you may set the K490IY002 to a state (referred to as "OFF") whereby you may choose from between the following options:

- the boiler will always be off; or
- the boiler will ensure a programmable anti-freeze temperature (it is recommended that it should be set to 5-6 ambient degrees) – please note that as regards the mountain resorts and places, where the temperature often falls below zero, water may freeze inside the pipes and, therefore, the latter may break.

In case you wish to manually set the desired temperature (to a fixed value) over a

24-hour period and for an indefinite period of time, you can use the program that causes the system to operate in manual mode (MANUAL).
If, on the contrary, you wish to make the system work at a desired, fixed temperature over a definite period of time, you can use the JOLLY program, by setting the number of hours during which this operating mode shall be active.

FITTING THE K490IY002 UNIT TO A RESIDENTIAL HOME

The K490IY002 programmable thermostat is a built-in unit (and, therefore, a very compact one). To ensure correct reading and programming, it can be installed at a height convenient for these operations, i.e. approximately 150-160 cm off the ground, bearing in mind that the temperature measured at such a height may be slightly higher than the reference ambient temperature. To this end, you may apply some correction to the measured temperature, so that the latter will reach the reference one.
As a rule, the programmable thermostat is placed in a central position in the flat, as far from cold spots (i.e. windows or doors), hot spots (i.e. heating radiators or cookers) and direct sunlight as possible, so as not to be affected to a large extent by these sources.

TEMPERATURE CONTROL IN OTHER ROOMS

The system behaviour is significantly affected by a number of factors, some of them related to the apartment construction project (e.g. wall and window insulation, heating radiator lay-out and radiating surfaces), some related to the heating system installation settings (e.g. the heating radiator water temperature). As a rule, these factors are not managed by the final user: they are managed by the designers and installers. However, the final user may have to control the temperature in different rooms by controlling one single thermostat (the K490IY002 unit itself), which is usually installed in the living-room. By assuming that the heating radiators in all rooms have been dimensioned properly, i.e. in such a manner that they ensure the same temperature in the entire apartment, the final user may need to have a different temperature control in the rooms other than the living-room.
To achieve a different temperature control in the other rooms, it is recommended that you should fit the radiators in such rooms with thermostatic valves (which, on the contrary, are of no use in the living-room where you will just have to adjust the available radiators by hand, by means of the upper and lower screw knob valves).
In particular, the thermostatic valves may come useful in the bedrooms where people do not live during the daytime and like it better to have, during the night, a lower temperature than the one set for the living-room.
If the temperature obtained in the bedrooms by means of thermostatic control is enough (the ordinary instance whereby a temperature not higher than the one set in the living-room is enough), you shall not take any action. Conversely, if the desired

temperature is not reached, it is recommended that you should partially close the valve (upper or lower valve) of the heating radiators in the living-room, in order to make the boiler work longer and, therefore, make the temperature go up in the other rooms.

EFFECT OF THE TEMPERATURE OF HOT WATER DELIVERY FROM THE BOILER

As we have pointed out above, the water temperature in the radiators will normally be adjusted by the installer according to the system dimensioning, depending on the apartment's heat dissipation and on how quickly you wish the ambient temperature change to occur.
The proper adjustment of such a temperature should allow the radiators to shift from a low temperature (e.g. during the night-time) to a higher one within a reasonable period of time.
An excessively low delivery temperature will prevent the desired temperature from being reached during the programmed time period. In fact, the calories supplied will be used in a twofold way, i.e. to make the temperature in the apartment go up and, at the same time, compensate for heat dissipation to the outside (heat demand).
To manage a profile of this type, which features variations by several degrees and bases the energy-saving element on reducing heat dissipation during the times when the difference between the inner temperature and the outer one is smaller, a water delivery temperature of approximately 70°C should therefore be applied.
Such temperatures will cause the heating radiators to be very hot, which will generate hot air (by convection) which will in turn cause the dust to move around in the apartment.

If, on the contrary, you wish to apply a lower delivery temperature (e.g. 50°C), you shall use a temperature profile that will keep a constant temperature as much as possible (i.e. keeping the same temperature all day round, at the most), so that the boiler shall only compensate continuously for the heat loss to the outside and shall never have to perform the heavy task of increasing the ambient temperature by several degrees. This profile is recommended especially for the condensing boilers, which work properly only when the return temperatures are low (and, therefore, with few transients).
In this case, it is recommended that the radiators should be over-dimensioned and, also, that a pump should be used, which should ensure a low fluid circulation speed in the system.
The decision on which method will definitely prove to be the most cost-effective one depends on a number of factors and shall be made by the final user.
In any case, it is recommended that the building insulation should be provided for

with great accuracy (with a particular regard to the door and window insulation): this will guarantee significant money-saving with regard to the heating costs.

SUMMER TIME OPERATION

The K490IY002 programmable thermostat (as described so far) is mainly used for winter temperature control, i.e. to control the heating boiler.
However, a command is available, which allows you to reverse the operation logic when the K490IY002 unit has to be used to manage a summer air-conditioning system: in this case, the K490IY002 shall close the air-conditioning system control contact (i.e. switching-on) when the temperature is higher than the set reference value, and shall open it (i.e. switching-off) when the temperature is lower.

Once this parameter has been set, the programming will be the same as the winter time operation (to which this manual refer, for the sake of simplicity).

The actuation differential for summer time operation is equal to ± 0.3°C.

MAINTENANCE

When the batteries need replacing (use two AAA mignon alkaline 1.5V batteries and replace them in a very short time), the programmed parameters will not be lost since all settings will be saved to a non-volatile memory (except for the date and time). Moreover, the K490IY002 unit will remain ON a few minutes (enough for the batteries to be replaced), even without the batteries (thanks to its low consumption and to a residual energy charge).
When the batteries have been replaced, the programmable thermostat shall be fitted in until it locks into the stop (the "battery down" symbol will go out the display).
If the symbols does not go out at once, wait a few minutes before doubting about the quality of the inserted batteries, then replace them again.

Please note that the state of the drive relay (the flame symbol is ON, or OFF) displayed on the disconnected K490IY002 unit will be the same as the one found at the time of disconnection, even if the programming has introduced a modification to this state. It will be updated when it is put back into place at the bottom.
As far as cleaning is concerned, only use a soft, dry cloth. Do not use water or any other liquid product.

WARNING!
The normal battery life exceeds one year, if the factory-set parameters are used and high quality batteries are used. It is recommended that you should replace the batteries at least once a year (at the beginning of the season when the unit is operated), to prevent them from running down when you are not at home.
Do not leave exhausted batteries inserted into the unit for a long time, since acid may leak from them, thus causing irreparable damage to the programmable thermostat.
To ensure proper disposal, the used batteries shall be discarded into special containers.

TECHNICAL FEATURES

Temperature adjustment scale	2-40°C, with increase by 0.1°C steps
Tambient measurement/displaying scale	-35 +60 °C
Power supply	2 AAA mignon alkaline 1.5V batteries
Battery life	approximately one year *
Connection with the boiler	By means of 3 screwed terminals (closed + open)
Contact capacity	5(3)A / 250 Vac
Type of action	1.B.U (micro-disconnection)
Software	classe A
Min. control differential	0,1°C
Thermal reference gradient	4K/h
Max. ambient temperature	T45
Electrical insulation	⧈ double insulation
Degree of protection	IP20
Degree of pollution	2
Pulse voltage	4000V
Connection with the K499Y001/K499Y001A phone activator	screw terminals
Conforming to	EN 60730-1 Standards (and second parts)
Mounting	Built into boxes featuring 3 modules (type 503), by means of two screws
Dimensions (body + bottom)	68 x 52,5 x 58 mm
Product not manufactured in Italy	

*The battery life refers to the case of normal operation, with the factory-set parameters.

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via dell'Osio N. 6 - 20090 Caleppio di Settala (Italia).
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Additional information

For additional information please check the website www.giacomini.com or contact the technical service:
☏ +39 0322 923372
🖷 +39 0322 923255
✉ consulenza.prodotti@giacomini.com

Giacomini S.p.A. Via per Alzo, 39 - 28017 San Maurizio d'Opaglio (NO) Italy

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